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CLAIMS

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1. A submount, comprising:

(a) a submount substrate; and

(b) a solder layer that:

5 (b1) is formed on the top surface of the submount substrate; and

(b2) has a surface roughness, Ra, of at most 0.18 μ m before the solder
layer is melted.**2. A submount as defined by claim 1, wherein the solder layer has a surface
roughness, Ra, of at most 0.15 μ m before it is melted.****10 3. A submount as defined by claim 1, wherein the solder layer has a surface
roughness, Ra, of at most 0.10 μ m before it is melted.****4. A submount as defined by claim 1, wherein the solder in the solder layer has
an average crystal-grain diameter of at most 3.5 μ m before it is melted.****5. A submount as defined by claim 1, wherein the top surface of the submount
15 substrate has a surface roughness, Ra, of at most 0.10 μ m.****6. A submount as defined by claim 1, the submount further comprising a sol-
der-protecting barrier layer formed between the submount substrate and the
solder layer.****7. A submount as defined by claim 6, the submount further comprising an elec-
20 trode layer formed between the submount substrate and the solder-protecting
barrier layer.****8. A submount as defined by claim 7, the submount further comprising be-
tween the submount substrate and the solder-protecting barrier layer:**

- (a) an intimate-contact layer formed such that it makes contact with the top surface of the submount substrate; and
- (b) an element diffusion-preventing layer formed on the intimate-contact layer;

5 the electrode layer being placed on the element diffusion-preventing layer.

9. A submount as defined by claim 8, wherein:

- (a) the intimate-contact layer comprises titanium;
- (b) the element diffusion-preventing layer comprises platinum;
- (c) the electrode layer comprises gold;

10 (d) the solder-protecting barrier layer comprises platinum; and

- (e) the solder layer comprises gold-tin-based solder.

11. A submount as defined by claim 1, wherein the submount substrate comprises an aluminum nitride-sintered body.

15 (a) a submount that comprises:

- (a1) a submount substrate; and
- (a2) a solder layer that:

- (a2a) is formed on the top surface of the submount substrate; and
- (a2b) has a surface roughness, Ra, of at most 0.18 μ m before the solder layer is melted; and

(b) a semiconductor light-emitting device mounted on the solder layer.